

# PEST RISK ASSESSMENT

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## Indian ringneck parrot

*Psittacula krameri*



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April 2011

**This publication should be cited as:**

Latitude 42 (2011) Pest Risk Assessment: Indian ringneck parrot (*Psittacula krameri*). Latitude 42 Environmental Consultants Pty Ltd. Hobart, Tasmania.

**About this Pest Risk Assessment**

This pest risk assessment is developed in accordance with the *Policy and Procedures for the Import, Movement and Keeping of Vertebrate Wildlife in Tasmania* (DPIPWE 2011). The policy and procedures set out conditions and restrictions for the importation of controlled animals pursuant to s32 of the *Nature Conservation Act 2002*.

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# I. Summary

The Indian ringneck parrot (*Psittacula krameri*) is a pale yellow-green parrot with a distinguishing long tail which lives in tropical and subtropical lightly wooded habitats in Africa and Asia. It feeds mainly on seeds, fruit, flowers and nectar. The behavioural flexibility of the species, its generalist feeding ecology and its ability to withstand temperate climatic conditions have contributed to the successful establishment of feral populations in many countries.

The Indian ringneck parrot is the most widely introduced parrot in the world, with populations established on five continents. Only Australia and Antarctica remain uncolonized, although in Western Australia in 2005-2007 several Indian ringneck parrots were removed from the wild that were thought to have survived in the wild for at least four years. Self-sustaining feral populations of Indian ringneck parrot occur in Europe, the United States, the Middle East, Japan, Singapore and several island groups including the Hawaiian, Canary, Andaman and Maldivian islands.

The Indian ringneck parrot is not globally threatened and is listed as least concern by the IUCN. It is listed by Ghana in Appendix III to the Convention on International Trade in Endangered Species of Wild Flora and Fauna and export and import of this species is therefore subject to regulation under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

In Tasmania the Indian ringneck parrot is currently listed as a controlled animal under the *Nature Conservation Act 2002*. A permit is required to import this species but they can be held without a permit to possess wildlife.

The natural distribution of the Indian ringneck parrot includes areas similar in climate to Tasmania and as this species is very adaptable there is potential for this species to establish in Tasmania. If the Indian ringneck parrot established in Tasmania it is likely to compete with the green rosella (*Platycercus caledonicus*), eastern rosella (*Platycercus eximius*), galah (*Cacatua roseicapilla*), sulphur-crested cockatoo (*Cacatua galerita*) and yellow-tailed black cockatoo (*Calyptorhynchus funereus*), as well as the introduced little and long-billed corellas (*Cacatua sanguine* and *Cacatua tenuirostris*) for food and nest hollows. There is also some potential for competition with the blue-winged parrot (*Neophema chrystoma*), orange bellied parrot (*Neophema chrysogaster*), musk lorikeet (*Glossopsitta concinna*) and swift parrot (*Lathamus discolor*) for food and other resources.

The establishment of the Indian ringneck parrot in Tasmania also has the potential for high impact on the agricultural industries such as cereal grains, oilseeds, grain legumes, fruit, nuts and flowers as the species is known to cause significant damage to these commodities in other countries.

## 2. Introduction

### 2.1 NAME AND TAXONOMY

**Kingdom:** Animalia  
**Phylum:** Chordata  
**Class:** Aves  
**Order:** Psittaciformes  
**Family:** Psittacidae  
**Genus:** *Psittacula*  
**Species:** *Psittacula krameri*



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#### **Sub-species or variety:**

Four subspecies are recognised:

*P. krameri krameri* (Scopoli 1769), African-ring-necked: West Africa in Guinea, Senegal and southern Mauritania, east to Western Uganda and Southern Sudan

*P. krameri parvirostris* (Souance 1856), Abyssinian-ring-necked: Northwest Somalia, west across northern Ethiopia to Sennar district, Sudan

*P. krameri manillensis* (Bechstein 1800), Indian-ring-necked: southern Indian subcontinent and Sri Lanka

*P. krameri borealis* (Neumann 1915), Boreal or Neumann's ring-necked: Bangladesh, Pakistan, northern India and SE China, Nepal to central Burma.

**Common names:** ring-necked parakeet, Indian ring-necked parrot, African ring-necked parrot, rose-ringed parakeet, rose-winged parakeet, Abyssinian-ring-necked parrot, Boreal or Neumann's ring-necked parrot

**Known hybrids:** Indian ring-necked parrots are popular as pets and they have a long history in aviculture. The following hybrids have been produced in captivity (*Psittacula* World 2011):

*Psittacula krameri* X *Psittacula eupatria*: These are the most common hybrids. They are often sold as sub-species of the Alexandrine parakeet (*Psittacula eupatria*).

*Psittacula krameri* X *Psittacula alexandri*: These hybrids are rare.

*Psittacula krameri* X *Psittacula himalayana*: These hybrids are not very often seen.

*Psittacula krameri* X *Psittacula cyanocephala*: These hybrids are very similar to *Psittacula intermedia*, which is thought to be a hybrid between *P. cyanocephala* x *P. himalayana* (Wikipedia 2011)

**Close relatives:** A phylogenetic analysis using DNA showed that the Mauritius parakeet (*Psittacula echo*) is closely related to this species, and probably a subspecies (Wikipedia 2011).

## 2.2 DESCRIPTION

The Indian ringneck parrot is a long-tailed, grass-green, red-beaked parrot, 37 cm to 43 cm in length (body and tail) and weighing 95-143 g. This species is sexually dimorphic. Male birds have a narrow black and pink collar while the female and immature birds either show no neck rings, or display shadow-like grey neck-rings, and emerald nape-bands. The upper mandible is red with a black tip and the lower mandible black, flight feathers are duskier green above and grey below, and the tail is bluish green on the central feathers and olive-yellowish below (del Hoyo 1997).

*Psittacula krameri parvirostris* is darker, with a stronger pink collar in the male and the upper mandible is all red. *P.k.borealis* is larger and more greyish below, with more blue on the head and the bill is usually all red. *P.k.manillensis* is like *P.k.borealis* but with a black lower mandible (del Hoyo 1997).

The appearance of *Psittacula krameri* hybrids (see Section 2.1- hybrids) shows characteristics of both the parent species.

Many mutation combinations have been achieved from about 20 primary mutations; Lutino, Blue, Albino, Greygreen, Grey, Cinnamon, Turquoise, Dilute, some Fallow types, Clear-tail, Violet, Darkgreen, Cobalt, Pied, and many more. Approximately 200 to 300 different combinations can be achieved with the existing mutations (Psittacula World 2011).

## 2.3 CONSERVATION AND LEGAL STATUS

### CONSERVATION STATUS

The Indian ringneck parrot is not globally threatened and is listed as least concern by the IUCN. The species has an extremely large range and the population trend appears to be increasing. The species is reported to be common to abundant throughout its natural range and the population is suspected to be increasing as ongoing habitat degradation is creating new areas of suitable habitat (Birdlife International 2009).

*Psittacula krameri* is listed by Ghana in CITES Appendix III, which allows for regulation of trade through permits and certificates. These are species that a CITES Party has identified as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation and which requires the cooperation of other countries in the control of trade.

### LEGAL STATUS AUSTRALIA

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* regulates the export and import of species included in the Appendices to CITES under Part 13A. International trade in specimens of the Indian ringneck parrot is therefore subject to regulation under this legislation.

In Tasmania the Indian ringneck parrot is currently listed as a controlled animal under the *Nature Conservation Act 2002*. A permit is required to import this species but it can be held without a permit to possess wildlife.

# 3. Biology and Ecology

## 3.1 LIFE HISTORY

The breeding season of the Indian ringneck parrot is from August to November in Africa, from December to May in India, from January to April in Asia and January to June in the UK (introduced) (del Hoyo 1997). Indian ringneck parrots nest in hollow trees, usually enlarged by the birds themselves, 3-10 m up, but sometimes in rock faces or ruined walls. They breed singly or in small loose groups of up to 4 pairs in the same tree. The nest cavity is lined with soft wood chips. The clutch size varies from 2 to 6 white eggs, although 3 or 4 eggs are most common. Brooding is by both parents, incubation lasts 22 days and the young remain in the nest for 6 to 7 weeks after hatching (del Hoyo 1997, Planet of Birds 2011). They are normally single brooded, but are known to occasionally have second broods (Shwartz and Shirley 1997).

The long central tail feathers are absent in recent fledglings, but are quickly acquired. Adult male plumage is not acquired until the third year, although successful breeding has been observed before full adult plumage is acquired (Planet of Birds 2011). The maximum recorded longevity for this species is 34 years in captivity (AnAge 2011).

Indian ringneck parrots have a long history in aviculture and in captivity are known to hybridise with the alexandrine parakeet (*Psittacula eupatria*), moustached parakeet (*Psittacula alexandri*), slaty-headed parakeet (*Psittacula himalayana*) and the plum-headed parakeet *Psittacula cyanocephala*). It is uncertain whether or not all these hybrids are fertile, although the hybrid birds from *Psittacula krameri* X *Psittacula eupatria* have been known to be fertile (Psittacula World 2011).

## 3.2 HABITAT REQUIREMENTS AND PREFERENCES

Indian ringneck parrots are found across a large range of environments and are able to tolerate variation in temperature and precipitation, as evidenced by their success in both sub-saharan Africa and north-western Europe. Indian ringneck parrots generally avoid mountainous and arid areas (DAISIE 2009).

Indian ringneck parrots are found in a wide variety of chiefly deciduous habitats ranging from semi-desert to light secondary jungle, mainly in lowlands but ranging in Asia up to altitudes of 1,600 m and in Ethiopia up to 2,000 m. They occur in short-grass and semi-desert savanna, open scrub and bushland, wooded valleys, savanna woodland, riparian and evergreen forest, *Pinus roxburghii* foothill forest, open agricultural land with scattered trees, gardens, orchards, cultivations, and often grain yards and railway stations (del Hoyo 1997).

Introduced populations are found mainly in cities and towns where they rely on rich fruit-bearing vegetation and bird feeders for food. In England these populations are spreading from towns into rural areas. In Western Australia escaped Indian ringneck parrots are often attracted to bird feeders containing seed or fruit put out for other species (WA Dept Ag 2007).

## 3.3 NATURAL GEOGRAPHIC RANGE

The Indian ringneck parrot is common throughout much of its extensive natural range. It occurs in sub-Saharan Africa and southern Asia from Afghanistan and Pakistan east through India to Myanmar (Burma) and south-east China (WA Dept Ag 2007). The overseas range of this species is 7,556,848 km<sup>2</sup>.

Countries included in the natural range of the Indian ringneck parrot are: Afghanistan, Bangladesh, Benin, Bhutan, Burkina Faso, Cameroon, Central African Republic, Chad, China, Cote d'Ivoire (Ivory Coast), Djibouti, Egypt, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, India, Liberia, Mali, Mauritania, Myanmar (Burma), Nepal, Niger, Nigeria, Pakistan, Senegal, Sierra Leone, Sri Lanka, Sudan, Togo, Uganda and Viet Nam (Vietnam). This species is considered a vagrant in Cape Verde and Somalia (Birdlife International 2009).

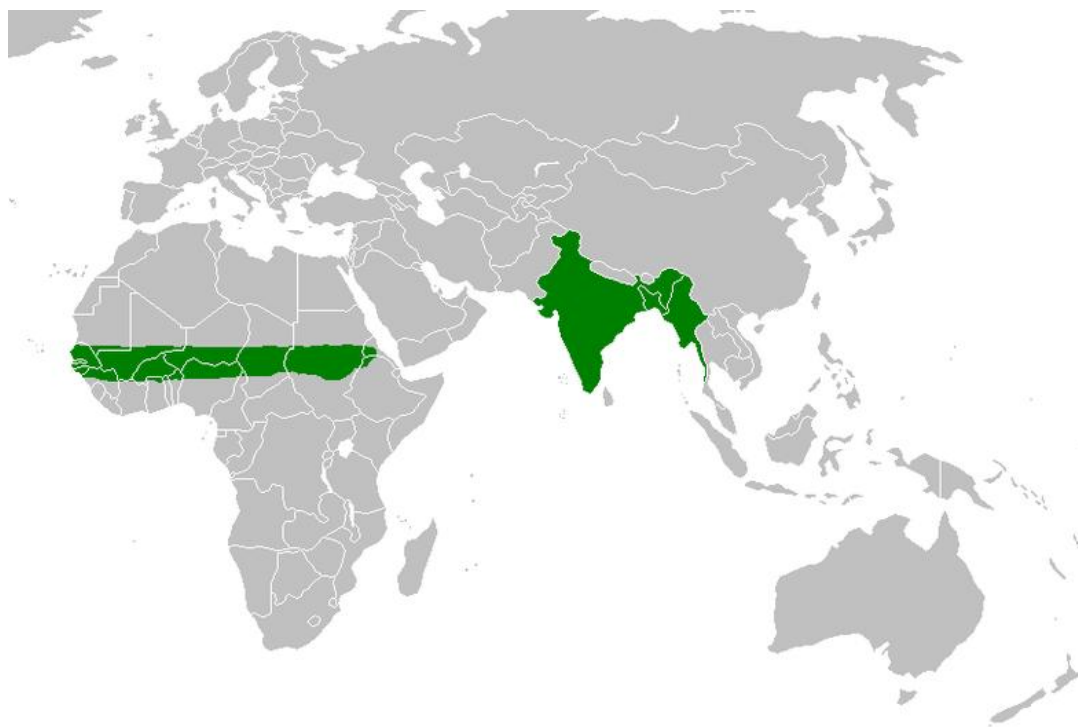


Figure 1: Native range of Indian ringneck parrot (Note: not all locations are shown). (Source: [http://en.wikipedia.org/wiki/File:Rose\\_ringed\\_parakeet\\_range.PNG](http://en.wikipedia.org/wiki/File:Rose_ringed_parakeet_range.PNG) )

### 3.4 INTRODUCED GEOGRAPHIC RANGE

Populations of Indian ringneck parrots resulting from the escape or release of caged birds occur in Europe, the United States, the Middle East, Japan, Singapore and several island groups including the Hawaiian, Canary, Andaman and Maldivian islands (WA Dept Ag 2007). Many of these populations are expanding in size and range in Western Europe (Belgium, Netherlands, and the UK) as well as Turkey and Israel (Shwartz and Shirley 1997).

Countries included in the introduced range of the Indian ringneck are: Bahrain, Belgium, Cuba, Germany, Hong Kong, Iran, Iraq, Israel, Italy, Japan, Jordan, Kenya, Kuwait, Lebanon, Maldives, Mauritius, Netherlands, Oman, Portugal, Qatar, Saudi Arabia, Singapore, Slovenia, South Africa, Spain, Turkey, United Arab Emirates, United Kingdom, United States (Florida, California and Puerto Rico), Venezuela and Yemen. (Birdlife International 2009, Planet of Birds 2011).

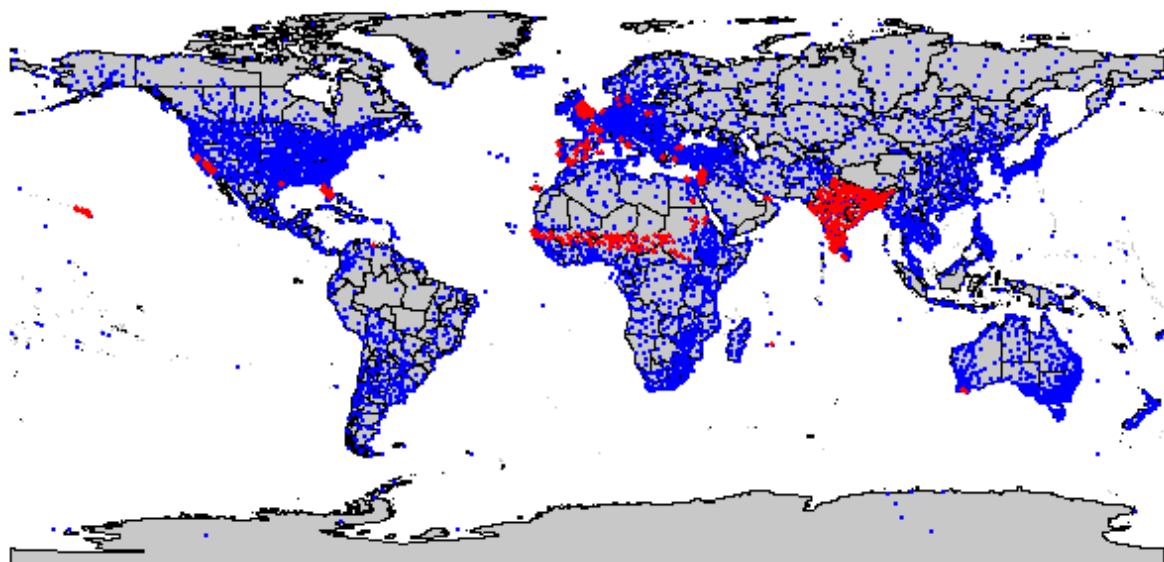
This species is sedentary, only expanding its range through extremely limited post-breeding dispersal (DAISIE 2009). The Greater London population is estimated to be expanding by

approximately 400m per year. However, it is a popular exotic cagebird, and as a result it has been able to colonise new areas through escape or release; several hundred birds are thought to escape or be released annually in England alone (DEFRA 2007).

Widespread introduction is not the only reason for their success. The UK population is thought to have grown from 4 individuals in 1968 to 6000 in 2002, and the best estimate for the current population is about 20,000 birds (DEFRA 2007). The growth of several different introduced populations of Indian ringneck parrots appears to be exponential (DEFRA 2007).

In the Netherlands and Belgium feral populations numbering 5-6000 each occur in urbanized areas. In Germany, these birds are found along the Rhine in all major urban areas between Neuss/Düsseldorf and Heidelberg, and in the northeast of Hamburg. Other populations are found around Paris and in Barcelona (Planet of Birds 2011).

Between 2005 and late 2007 at least 25 Indian ringneck parrots were removed from the wild in Western Australia. Some of these birds are thought to have survived in the wild for at least four years and two groups had reportedly bred. Several captured birds had leg bands that identified them as originating with bird breeders (WA Dept Ag 2007).



Climatch v1.0  
Invasive Animals CRC  
Bureau of Rural Sciences 2008

Figure 2: Global distribution of the Indian ringneck parrot as selected for climate matching during risk assessment process. (Source: CLIMATCH – <http://adl.brs.gov.au:8080/Climatch/> )

### 3.5 POTENTIAL DISTRIBUTION IN TASMANIA

Using modelling applications by the Bureau of Rural Science (DAFF), climate is compared between the species' known range and potential distribution throughout Australia (shown in Figure 2). Modelling indicates that mainland Australia has highly similar climate which may support the



establishment of introduced populations. This modelling also indicates potential for this species to establish in Tasmania. The Climate match score is high (17).

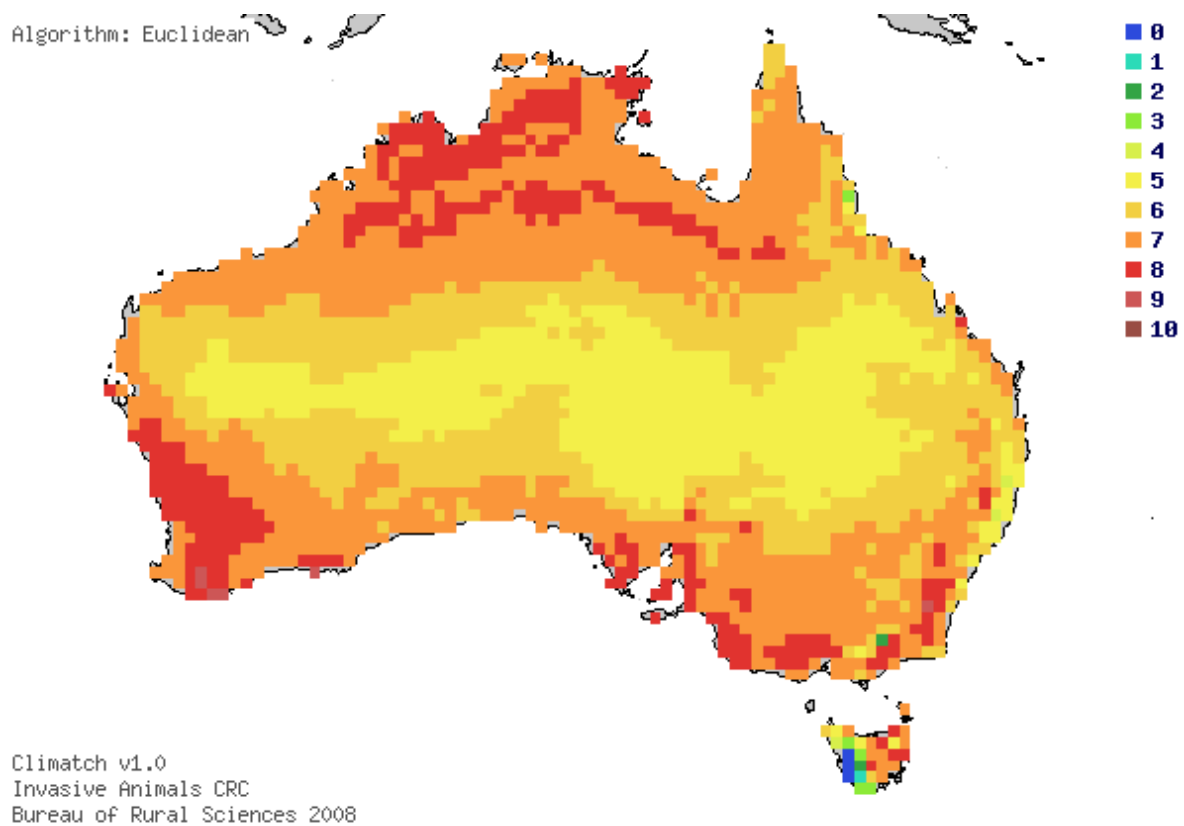


Figure 3: Climate match results showing the potential geographic distribution of the Indian ringneck parrot in Australia. (Source: CLIMATCH – <http://adl.brs.gov.au:8080/Climatch/> )

### 3.6 DIET AND FEEDING BEHAVIOUR

Indian ringneck parrots eat a wide variety of foods including cereal grains, legumes, fruits, nuts and blossoms. In Africa, recorded fruits include *Ficus*, *Ziziphus*, *Tamarindus*, guavas, dates, mangoes, boabab, seeds of *Acacia albida* and *Salassus*, plus cultivated seeds and nuts of millet, sorghum, lentils, guinea-corn, groundnuts, oil palms and coffee. In Asia, diet includes seeds of *Prosopis spicigera*, *Acacia arabica*, *Casuarina equisetifolia*, fruit of *Dalbergia sissoo*, *Ficus*, *Acacia*, *Ziziphus*, *Xanthium*, *Melia azedarach*, *Azadirachta indica* and *Albizia lebbek*, flowers and fruit of *Capparis aphylla*, flower petals and nectar of *Salmalia melabarica*, *Eruthrina indica*, *Butea monosperma*, *Bassia latifolia* (del Hoyo 1997).

In Asia, especially India, they are regarded as one of the most destructive bird pests in agriculture, coming in enormous flocks to cereal and fruit crops, especially *Citrus* and *Prunus*. In one area, guavas were the favoured cultivated fruit, with maize eaten September-December, groundnuts November-March, and May-June, and wheat in March. In another area, pearl millet, sorghum and maize were greatly consumed in August-December, guava in January-March and July-August, mulberry seeds in April-May; coffee, chilli, sunflowers, mustard, pepper are also attacked. Feral birds in the UK take fruits and berries of *Rosaceae*, *Ilex*, *Sambucus*, nuts of *Fagus*, *Aesculus*, *Carpinus*,

*Fraxinus*, *Pinus*, cultivated fruit and cereals, and food at bird tables. Feral birds in Arabia take dates, grain, seeds of sunflower and *Caesalpinia* (del Hoyo 1997).

In Europe, they also show a great deal of diversity in their feeding behaviour, consuming fruit such as apples, pears, cherries and plums and grapes, the berries of holly and elder, cereals such as barley and maize, the seeds of European hornbeam (*Carpinus betulus*) and European ash (*Fraxinus excelsior*), and even bread, bacon rind and meat. Indian ringneck parrots also make extensive use of garden bird feeders, consuming large quantities of peanuts and sunflower seeds (Tayleur 2010). The Indian ringneck parrot's tolerance of a range of environmental conditions be related to its generalist feeding behaviour (Tayleur 2010).

### **3.7 SOCIAL BEHAVIOUR AND GROUPINGS**

Indian ringneck parrots are assertive, adaptable and resourceful. Being social birds they are usually seen in small groups but they can form large flocks of hundreds – and occasionally more than 1000 – at roosts and food sources (WA Ag). They are noisy and conspicuous and prefer to stay in one area, only moving around in that area when foraging. Indian ringneck parrot flight is swift and direct with rapid wing-beats (Psittacula World).

Indian ringneck parrots are very vocal, particularly during flight and on roosting trees, with a variety of distinctive screeching calls. They can be identified by their typical shrill *kee-ak* call which is unlike that of any native parrot. (Tayleur 2010, WA Dept Ag 2007)

Indian ringneck parrots are resident in African and Asian regions, except that in cultivated areas there are local feeding movements governed by ripening of crops. European introduced populations are also mainly resident (Planet of Birds 2011).

Normally this parrot is arboreal but it flies down to feed on crops and garden plants, and occasionally settles on the ground to pick up food-stuffs. On the ground it has an awkward sidling gait, due to the long tail and the short zygodactyle feet which are specially adapted for climbing and for holding food. They sit on one foot and hold food with the other. They habitually undertake an evening flight, after which they may roost in company with flocks of crows and mynahs (Anon. 2011).

### **3.8 NATURAL PREDATORS AND DISEASE**

Known predators of the Indian ringneck parrot are the northern goshawk (*Accipiter gentilis*), Eurasian sparrowhawk (*Accipiter nisus*), red kite (*Milvus milvus*), hooded crow (*Corvus cornix*), jackdaw (*Corvus monedula*). Snakes may rob eggs and nestlings from the large cavities, however there are no snakes in Tasmania that are known to eat bird's eggs (DAISIE 2007).

Potential predators of the Indian ringneck parrot in Tasmania are the brown goshawk and the peregrine falcon.

Indian ringneck parrots are possible vectors for diseases such as Newcastle disease (Butler 2003) cryptosporidium and psittacosis (Tayleur 2010), which could have a detrimental effect on the poultry industry.

It is probable that the Indian ringneck parrot would be susceptible to psittacine circovirus which occurs naturally in the wild (Tayleur 2010). The disease it causes (also known as beak and feather disease) is widespread and has been reported in more than 61 psittacine species, including the orange-bellied parrot, swift parrot, and many common species such as the sulphur crested

cockatoo and the galah. The virus can affect birds of all ages, but particularly juveniles or young adults. The virus kills feather and beak cells. Symptoms of the acute form of this disease include diarrhoea and feather abnormalities, and death may occur suddenly within one to two weeks of the first symptoms. The chronic form results in feather, beak and skin abnormalities, with most birds eventually dying. The virus multiplies in the liver and can be transmitted orally or in faeces or feathers. It is one of the smallest and most resistant disease-causing viruses and probably remains alive for many years in tree hollows and other nest sites. The potential effects of the disease on parrot populations range from inconsequential to devastating, depending on environmental conditions and the general health of the parrots. The disease appears to have originated in Australia and is widespread and continuously present in wild populations of Australian parrots (DEH 2011, DEH 2005, Ortiz-Catedral et al 2010).

### 3.9 THREAT TO HUMAN SAFETY

There have been no recorded adverse effects of Indian ringneck parrots on humans.

### 3.10 HISTORY AS A PEST

The Indian ringneck parrot is a major pest of agriculture within its natural range. Large numbers of Indian ringneck parrots raid crops and grain storage facilities causing enormous losses. A variety of economically important crops are attacked including barley, sunflower, nuts and fruit such as mango, guava, fig, grape and peach (WA Ag). In Asia, especially India, they are regarded as one of the most destructive bird pests in agriculture, coming in enormous flocks to cereal and fruit crops (del Hoyo 1997). Introduced populations also damage trees in orchards, vineyards, parks and gardens (WA Dept Ag 2007).

In England, Indian ringneck parrots are increasingly becoming pests of fruit crops such as apples and have caused considerable damage in some instances, although they are not yet considered a serious pest. In Australia they strip bark from young trees as a food source in autumn, causing serious damage to plantations (DEFRA 2007).

Indian ringneck parrots are secondary cavity-nesters and are known to compete with native species. In many habitats, the number of cavities is a major factor regulating population densities of cavity-nesters. These parrots begin breeding prior to most other secondary cavity-nester species and occupy the nests before native birds begin to breed, giving them a competitive advantage over native breeding birds. They are robust and able to excavate existing cavities which might further aid their ability to compete (Butler 2003). Common kestrel (*Falco tinnunculus*), stock dove (*Columba oenas*), western jackdaw (*Corvus monedula*), Eurasian nuthatch (*Sitta europaea*) and common starling (*Sturnus vulgaris*) are considered the most likely species to be vulnerable to nest-site displacement (Butler 2003, Strubbe 2001). They also compete with other cavity nesters such as mynas, hoopoes, rollers and owlets (Strubbe 2001).

Indian ringneck parrots are known to consume food items that are also consumed by native birds. They may also be able to take some fruit earlier than native species, and there is evidence suggesting that they may be able to take mistletoe (*Viscum* spp). berries, before thrushes are able to consume them (Tayleur 2010).

Indian ringneck parrots are also responsible for noise disturbance from loud squawking and screeching at large roost sites (DAISIE 2007) and large numbers living in parks are a nuisance because of noise and damage to trees (WA Dept Ag 2007).

Additional economic damage is caused by Indian ringneck parrot involvement in aircraft strikes. In one study it was found that of 54 bird strikes at Heathrow Airport in 2005, one involved Indian ringneck parrots, whereas in 2006, two of 44 bird strikes involved Indian ringneck parrots. The cost per bird strike was reported to be £20 000 (Fletcher and Askew 2007 in Tayleur 2010).

This species is recorded on the Global Invasive Species Database (GISD 2011).

### 3.11 POTENTIAL IMPACT IN TASMANIA

If the Indian ringneck parrot established in Tasmania it is likely to compete with the green rosella (*Platycercus caledonicus*), eastern rosella (*Platycercus eximius*), galah (*Cacatua roseicapilla*), sulphur-crested cockatoo (*Cacatua galarita*) and yellow-tailed black cockatoo (*Calyptorhynchus funereus*), as well as the introduced little and long-billed corellas (*Cacatua sanguine* and *Cacatua tenuirostris*) for food and nest hollows. There is also some potential for competition with the blue-winged parrot (*Neophema chrystoma*), orange bellied parrot (*Neophema chrysogaster*), musk lorikeet (*Glossopsitta concinna*) and swift parrot (*Lathamus discolor*) for food and other resources.

The Indian ringneck parrot has a high climate match with Tasmania (score of 17) and a high percentage of the range of the blue-winged parrot, green rosella, galah, sulphur-crested cockatoo and yellow-tailed black cockatoo overlaps with areas with which there is a high climate match with the Indian ringneck parrot (grids with climate match scores 7 & 8).

The establishment of the Indian ringneck parrot in Tasmania has the potential for high impact on agricultural industries as the species is known to be capable of damaging commodities such as cereal grains, oilseeds, grain legumes, fruit (notably apples and grapes), nuts and flowers. There have been reports of major damage to these commodities, or similar commodities, in several countries. Agricultural areas in Tasmania overlap with areas with which there is a high climate match with the Indian ringneck parrot (grids with climate match scores 7 & 8). This means that the Indian ringneck parrot, if established, is likely to come into contact with these commodities.

# 4. Risk Assessment

## 4.1 PREVIOUS RISK ASSESSMENTS

A scientific risk assessment conducted by the Department of Agriculture and Food in Western Australia indicated that the Indian ringneck parrot poses an extreme threat to Australia. The assessment showed that the climate of the Indian ringneck parrot’s overseas range is similar to Australia’s climate (WA Dept Ag 2007).

The Vertebrate Pests Committee (2007) assessed Indian ringneck parrots as being in the Extreme Threat Category. Species placed in the Extreme Threat Category “...should not be allowed to enter, nor be kept in any State or Territory. (Special consideration may be given to scientific institutions on a case by case basis.) Any species that has not been assessed previously should be considered to be in the Extreme Threat Category and should be treated accordingly, until a risk assessment is conducted” (Vertebrate Pests Committee 2007).

In Great Britain the Non-native Species Secretariat manages the risk analysis process and has developed the GB Risk Analysis Mechanism to promote the use of good quality risk assessment. Risk assessments are carried out by independent experts from a range of organisations. A risk assessment on the importation of the Indian ringneck parrot into Great Britain has given this species a risk assessment rating of 'medium'. There is a 'very likely' establishment potential, 'intermediate' spread potential and a 'moderate' impact potential (NNS 2011).

## 4.2 RISK ASSESSMENT

The following risk assessment determines the risk of Indian ringneck parrots to Tasmania using the Bomford model (2008) and proposes assigned threat categories and import classifications for the species.

Species:	Indian ringneck parrot ( <i>Psittacula krameri</i> )	
Date of Assessment:	01 March 2011	
Literature search type and date:	See references	
Factor	Score	
A1. Risk posed from individual escapees (0-2)	0	Low risk
A2. Risk to public safety from individual captive animals (0-2)	0	Low risk
<b>Stage A. Risk posed by individual animals (risk that a captive or escape animal would harm people)</b>	<b>Public Safety Risk Score = A1 + A2 = 0</b>	<b>Public Safety Risk Ranking A = 0, NOT DANGEROUS</b>
B1. Climate match score (1-6)	4	Climate match score 17
B2. Exotic population established overseas score (0-4)	4	Introduced populations established in N America, Middle East, Asia and Europe
B3. Overseas range size score (0-2)	1	Overseas population range 7,556,848 Km sq
B4. Taxonomic class score (0-1)	0	Bird

<b>Stage B. Likelihood of establishment (risk that a particular species will establish a wild population in Tasmania)</b>	<b>Establishment Risk Score</b> = B1 + B2 + B3 + B4 = 9	<b>Establishment Risk Ranking</b> B = 9-10, SERIOUS
C1. Taxonomic group (0-4)	0	Order Psittaciformes. Unlikely to hybridise with native species. No native species in same genus
C2. Overseas range size (0-2)	2	Overseas population range 7,556,848 Km sq
C3. Diet and feeding (0-3)	0	Bird
C4. Competition for native fauna for tree hollows (0-2)	2	Nests in tree hollows
C5. Overseas environmental pest status (0-3)	1	It has been suggested that feral populations could endanger populations of native British birds (Wikipedia).
C6. Climate match to areas with susceptible native species or communities (0-5)	4	15 grid squares with climate match classes of 7 & 8 that overlap the distribution of green rosella, and blue-winged parrot. They also overlap distribution of galah, sulphur-crested cockatoo and yellow-tailed black cockatoo. Compete with these species for food.
C7. Overseas primary production (0-5)	3	In Asia, especially India, regarded as one of the most destructive pests in agriculture (Birds of the World) .Causes damage to sorghum fields in Africa. Reported to be a destructive pest in Mauritius (IBOTW).
C8. Climate match to susceptible primary production (0-5)	3	Range of susceptible commodities covered by grid squares with climate range 5-8.
C9. Spread disease (1-2)	2	Bird
C10. Harm to property (0-3)	0	Low risk
C11. Harm to people (0-5)	0	Low risk
<b>Stage C. Consequence of Establishment (risk that an established population would cause harm)</b>	<b>Consequence Risk Score</b> = sum of C1 to C11 = 17	<b>Consequence Risk Ranking</b> C = 15-19, SERIOUS
<b>ASSIGNED THREAT CATEGORY:</b>	<b>EXTREME</b>	
<b>PROPOSED IMPORT CLASSIFICATION:</b>	<b>PROHIBITED</b>	

## 5. References

- AnAge: Animal Aging and Longevity Database (2011) Downloaded from [http://genomics.senescence.info/species/entry.php?species=Psittacula\\_krameri](http://genomics.senescence.info/species/entry.php?species=Psittacula_krameri) Accessed April 2011.
- Anonymous. 2011 *Psittacula krameri* - Scopoli, 1769 (Rose-ringed Parakeet ) in Deomurari, A.N. (Compiler), 2010. AVIS-IBIS (Avian Information System - Indian BioDiversity Information System) v. 1.0. Foundation For Ecological Security, India retrieved on 04/27/2011
- BirdLife International 2009. *Psittacula krameri*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 09 May 2011.
- BirdLife International 2011. Species factsheet: *Psittacula krameri*. Downloaded from <http://www.birdlife.org> on 10/05/2011.
- Bomford, M (2008) *Risk Assessment Models for the Establishment of Exotic Vertebrates in Australia and New Zealand*. Invasive Animals Cooperative Research Centre, Canberra
- Butler, J. C. 2003 Population Biology of the Introduced Rose-ringed Parakeet *Psittacula krameri* in the UK
- del Hoyo J., Elliott A. and Sargatal J. eds. (1997) *Handbook of Birds of the World Vol 4: Sangrouse to Cuckoos*. Lynx Edicions, Barcelona
- Department of Environment, Food and Rural Affairs, UK (DEFRA) 2011. Ring-necked parakeet fact sheet. Downloaded from <https://secure.fera.defra.gov.uk/nonnativespecies/factsheet/downloadFactsheet.cfm?speciesId=2886> Accessed May 2011
- Department of Environment and Heritage (DEH) 2005. Threat abatement plan for beak and feather disease affecting endangered psittacine species. ISBN 0 642 549 117 Downloaded from <http://www.environment.gov.au/biodiversity/threatened/publications/tap/pubs/beak-feather-tap.pdf> Accessed April 2011
- Department of Environment and Heritage (DEH) 2011. Beak and feather disease (Psittacine circoviral disease) Fact sheet. Downloaded from <http://www.environment.gov.au/biodiversity/invasive/publications/pubs/p-c-disease.pdf> Accessed April 2011
- Global Invasive Species Database (GISD) 2011. Downloaded from <http://www.issg.org/database/species/search.asp?sts=sss&st=sss&fr=1&sn=psittacula+krameri&rn=&hci=-1&ei=165&lang=EN&imageI.x=34&imageI.y=8> Accessed May 2011
- Tayleur, J. 2010. A comparison of the establishment, expansion and potential impacts of two introduced parakeets in the United Kingdom *BOU Proceedings – The Impacts of Non-native Species*. Downloaded from <http://www.bou.org.uk/bouproc-net/non-natives/tayleur.pdf> Accessed May 2011
- Non-native Species Secretariat (NNSS) 2011. Information about GB Non-native Species Risk Assessments Downloaded from <https://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?sectionid=51> Accessed May 2011
- Ortiz-Catedral, L., Kurenbach, B., Massaro, M., McInnes, K., Brunton, D.H., Hauber, M.E., Martin, D.P. and Varsani, A. 2010. A new isolate of beak and feather disease virus from endemic wild red-fronted parakeets (*Cyanoramphus novaezelandiae*) in New Zealand *Arch Virol.* Apr;155(4):613-20.

Epub Feb 24. Downloaded from <http://www.ncbi.nlm.nih.gov/pubmed/20180139> Accessed April 2011

Planet of Birds 2011 Rose-ringed parakeet. Downloaded from [http://www.planetofbirds.com/?s=rose%20ringed%20parakeet%20psittacula%20krameri&search\\_404=1](http://www.planetofbirds.com/?s=rose%20ringed%20parakeet%20psittacula%20krameri&search_404=1) Accessed May 2011

Psittacula World 2011. Downloaded from <http://www.psittacula-world.com/EN/Species/Hybridization.htm> Accessed May 2011

Shwarztr, A. and Shirley, S. 1997. Delivering Alien Invasive Species for Europe: *Psittacula krameri*. Downloaded from <http://www.europe-aliens.org/speciesSearch.do> Accessed May 2001

Strubbe, D, Matthysen, E. and Graham, C. H. 2010 Assessing the potential impact of invasive ring-necked parakeets *Psittacula krameri* on native nuthatches *Sitta europaea* in Belgium Journal of Applied Ecology Volume 47, Issue 3, pages 549–557,

Vertebrate Pests Committee. 2007. List of Exotic Vertebrate Animals in Australia 2006. [http://www.feral.org.au/feral\\_documents/VPCListJan06.pdf](http://www.feral.org.au/feral_documents/VPCListJan06.pdf) Accessed May 2011

Wikipedia 2011. Intermediate parrot. Downloaded from [http://en.wikipedia.org/wiki/Intermediate\\_Parakeet](http://en.wikipedia.org/wiki/Intermediate_Parakeet) Accessed May 2011

WA Department of Agriculture and Food 2007. Animal Pest Alert: Indian Ringneck Parrot. Downloaded from [http://www.agric.wa.gov.au/objtwr/imported\\_assets/content/pw/vp/bird/pestnoteindianringneckfinal\\_text\\_200607.pdf](http://www.agric.wa.gov.au/objtwr/imported_assets/content/pw/vp/bird/pestnoteindianringneckfinal_text_200607.pdf) Accessed May 2011



## 6. Appendices

### APPENDIX A: CALCULATING TOTAL COMMODITY DAMAGE SCORE

Column 1	Column 2	Column 3	Column 4	Column 5
Industry	Commodity Value Index (CVI)	Potential Commodity Impact Score (PCIS, 0-3)	Climate Match to Commodity Score (CMCS, 0-5)	Commodity Damage Score (CDS columns 2 x 3 x 4)
Cattle (includes dairy and beef)	11	0	0	0
Timber (includes native and plantation forests)	10	0	0	0
Aquaculture	6	0	0	0
Sheep (includes wool and meat)	5	0	0	0
Vegetables	5	0	0	0
Fruit (includes wine grapes)	5	3	4	60
Poultry (including eggs)	1.5	1	6	6
Cereal grain (includes wheat, barley, sorghum etc)	1	3	4	12
Other crops and horticulture (includes nuts and flowers)	1	3	4	12
Pigs	1	0	0	0
Bees (includes honey, beeswax, and pollination)	0.5	0	0	0
Oilseeds (includes canola, sunflower etc)	0.5	3	4	6
Grain legumes (includes soybeans)	0.3	3	4	3.6
Other livestock (includes goats and deer)	0.3	0	0	0
<b>Total Commodity Damage Score (TCDS)</b>				<b>99.6</b>

C8. Climate match to susceptible primary production (on a scale of 0–5) = 3

## APPENDIX B: ASSIGNING SPECIES TO THREAT CATEGORIES

A: Danger posed by individual animals (risk a captive or escaped individual would harm people)	B: Likelihood of establishment (risk that a particular species will establish a wild population in Tasmania)	C: Consequence of establishment (risk that an established population would cause harm)	Threat category	Implications for any proposed import into Tasmania
Highly, Moderately or Not Dangerous	Extreme	Extreme	Extreme	Prohibited
Highly, Moderately or Not Dangerous	Extreme	Serious		
Highly, Moderately or Not Dangerous	Extreme	Moderate		
Highly, Moderately or Not Dangerous	Extreme	Low		
Highly, Moderately or Not Dangerous	Serious	Extreme		
<b>Highly, Moderately or Not Dangerous</b>	<b>Serious</b>	<b>Serious</b>		
Highly, Moderately or Not Dangerous	Moderate	Extreme		
Highly, Moderately or Not Dangerous	Serious	Moderate	Serious	Import restricted to those collections approved for keeping serious threat species
Highly, Moderately or Not Dangerous	Serious	Low		
Highly, Moderately or Not Dangerous	Moderate	Serious		
Highly Dangerous	Moderate	Moderate		
Highly Dangerous	Moderate	Low		
Highly, Moderately or Not Dangerous	Low	Extreme		
Highly, Moderately or Not Dangerous	Low	Serious		
Highly Dangerous	Low	Moderate		
Highly Dangerous	Low	Low		
Moderately or Not Dangerous	Moderate	Moderate		
Moderately or Not Dangerous	Moderate	Low		
Moderately or Not Dangerous	Low	Moderate		
Moderately Dangerous	Low	Low		
Not Dangerous	Low	Low	Low	Import Permitted
Unknown	Any value	Any value	Extreme until proven otherwise	Prohibited
Any Value	Unknown	Any value		
Any Value	Any value	Unknown		
Unassessed	Unassessed	Unassessed		

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